In the setting of Galois extensions of commutative rings, Harrison groups play an important role to structure the understanding of possible Galois extensions of a given ring by a prescribed abelian group. I will present concepts of Harrison groups in the context of John Rognes' topological analog of Galois extensions for commutative S-algebras. It turns out that the naive transfer of the algebraic notion is too strict for the setting of ring spectra. There are (at least) two alternative notions. I will explain the advantages and drawbacks of these and calculate one example, namely the (weak) Harrison group of C_2-extensions of real K-theory with 2 inverted.